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Patent Abstracts of Japan

PUBLICATION NUMBER : 63240027
PUBLICATION DATE : 05-10-88

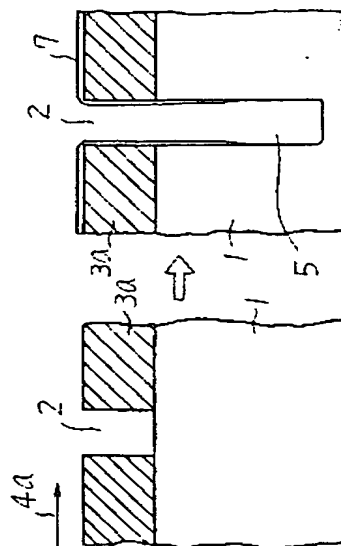
APPLICATION DATE : 27-03-87
APPLICATION NUMBER : 62075017

APPLICANT : FUJITSU LTD;

INVENTOR : MATSUTANI TAKESHI;

INT.CL. : H01L 21/302

TITLE : DRY ETCHING PROCESS



ABSTRACT : PURPOSE: To improve the side sectional shape of etching part while relaxing the restrictions for selecting the masking material by a method wherein the aspect ratio (depth/width) of a mask opening is increased while a reactant gas to form a tough deposit film is used.

CONSTITUTION: A reaction product 7 is deposited on the surface of a mask 3a while a substrate 1 is etched on the bottom 5 of an opening 2 after setting up the aspect ratio (depth/width) of opening 2 as well as a reactant gas 4a to be fed. It is recommended to set up the aspect ratio exceeding 1.5 and in case the applicable material of substrate 1 is silicon, the reactive gas 4a comprising a mixture of silicon tetrachloride (SiCl_4) and oxygen (O_2) or boron trichloride (BCl_3) and oxygen. Through these procedures, a tough deposit film can be formed on the side of etching part (trench 5) so that an excellent trench structure may be formed relaxing the restrictions for selecting the masking material.

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PUBLICATION NUMBER : 10022271
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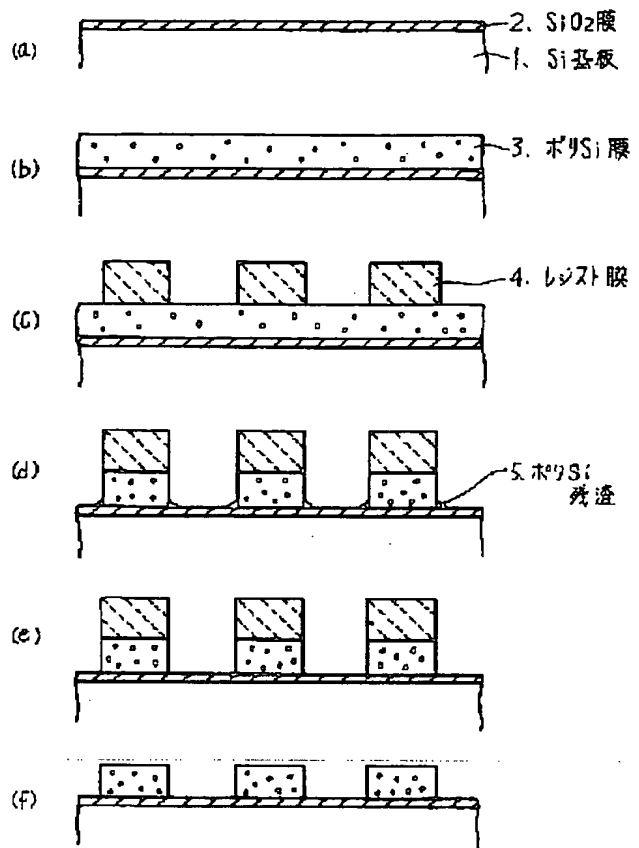
APPLICATION DATE : 05-07-96
APPLICATION NUMBER : 08176535

APPLICANT : FUJITSU LTD;

INVENTOR : SASAKI RIICHI;

INT.CL. : H01L 21/3065 H01L 21/3213 H01L 29/78

TITLE : MANUFACTURE OF SEMICONDUCTOR DEVICE



ABSTRACT : PROBLEM TO BE SOLVED: To control particles during the dry etching of a poly-Si film and prevent a thin gate oxidized film from being damaged by minutely varying the flow rate ratio of gaseous chlorine to gaseous oxygen during the dry etching of a polycrystalline silicon film.

SOLUTION: After a resist film 4 is patterned, a Cl₂/O₂ flow rate ratio is made large in a 1st step to suppress the production of SiO_x, taking a countermeasure against the reduction of particles due to the production. Then the Cl₂/O₂ flow rate ratio is switched right after the poly-Si film 4 except below a resist film 4 is removed by using an EPD(etching end point detector), etc. Then the Cl₂/O₂ flow rate ratio is made small when etching is carried out in a 2nd step. Thus, the etching selection ratio of the poly-Si film and SiO₂ film 2 is improved and then a countermeasure against a defect (breaking) of the gate oxidized film can be taken.

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